



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,928	05/24/2001	Katsusuke Shimazaki	109431	5074
25944	7590	08/11/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			CHEN, TIANJIE	
			ART UNIT	PAPER NUMBER
			2652	

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/830,928

Applicant(s)

SHIMAZAKI ET AL.

Examiner

Tianjie Chen

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 July 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 51-68, 70-76 and 78-94 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 51-57 and 88-94 is/are allowed.  
6) ☒ Claim(s) 57-63, 66-68, 70-72, 75, 76 and 78-87 is/are rejected.  
7) ☒ Claim(s) 64, 65, 73 and 74 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. 20050617.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## ***Final Rejection***

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 67 is rejected under 35 U.S.C. 102(e) as being anticipated by Ohno et al (US 6,165,578).

With regard to claim 67, Ohno et al shows a disk substrate for an optical disk, the substrate having an axis of rotation and a thickness less than 0.8 mm (Column 4, lines 5-16), wherein a disk plane tilts at a tilt angle (Column 7, lines 20-25):

$$\theta = 1.0^\circ = 17 \text{ mrad},$$

which satisfies:

$$10 \text{ mrad} \leq \theta \leq 20 \text{ mrad},$$

with a plane perpendicular to the axis of rotation after the substrate had been manufactured as an optical disc.

2. Claims 58, 66, and 76 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishii et al (JP 3-259452A).

With regard to claims 58 and 66; Ishii et al shows a disk 7 (Fig. 1) with substrate which is to be mounted on a magnetic mounting part with magnet clasper

Art Unit: 2652

8 (CONSTITUTION section) of a driving apparatus for driving the disk, including: a disk plane with warpage, i.e. it tilts substantially with respect to a plane perpendicular to an axis of rotation of the substrate and the disk plane tilting symmetrically with respect to the axis of rotation; and a hub 1 which is attractable by the magnetic part 9 to press the disk in such manner that the warpage is corrected. i.e. the disk plane becomes horizontal when the disk is mounted on the mounting part of the driving apparatus.

With regard to claim 76, Ishii et al shows a driving apparatus in Fig. 1 for driving a record disk having a hub 1, which is magnetically attracted to press the record disk, including: a driving unit 12 that drives a record disk 7 having a substrate which has a disk with warpage, i.e. having a plane tilting substantially with respect to a plane perpendicular to an axis of rotation of the substrate and the disk plane tilting symmetrically with respect to the axis of rotation; and a support (Fig. 1) for supporting a part of the record disk to adjust the tilt of the record disk as the hub 1 presses the record disk against the support (Fig. 1).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 67 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakuwa et al (US 6,162,519).

Art Unit: 2652

With regard to claims 67 and 72, Takakuwa et al shows a disk substrate for an optical disk, the substrate having an axis of rotation, wherein a disk plane tilts at a tilt angle  $\theta$ , which is  $0.6^\circ = 11 \text{ mrad}$  (Column 2, lines 46-48), which satisfies:

$$10 \text{ mrad} \leq \theta \leq 20 \text{ mrad},$$

with a plane perpendicular to the axis of rotation after the substrate had been manufactured.

Takakuwa et al specifies that the substrate is for a optical disk, but does not specify the thickness of the substrate.

Official Notice is taken: one standard of thickness of the optical disk is 0.6 mm, which is less than 0.8 mm. One of ordinary skill in the art would have been motivated to include the thickness of 0.6 mm for the thickness of the substrate.

3. Claim 59-63, 68, 70, 71, 75, 78, 79, and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakuwa et al in view of Ishii et al/over Ishii et al in view of Takakuwa et al.

With regard to claims 68 and 75, Takakuwa et al discloses an optical disk but does not disclose a disk drive. Ishii et al discloses a disk drive for optical disk. One of ordinary skill in the art would have been motivated to apply Takakuwa et al's disk into Ishii et al's drive. In this drive, the hub 1 is magnetically attracted.

With regard to claim 70, Ishii et al further shows cylindrical receptacle 8 for holding the hub 1, the receptacle having a hole formed through the bottom thereof coaxially with the axis of rotation.

With regard to claim 71, Ishii et al further shows that the hub 1 is held movably in the cylindrical receptacle 8 (Fig. 1).

Art Unit: 2652

With regard to claim 75, the above constructed device includes an optical disk with a disk substrate as described above.

With regard to claim 59, Takakuwa et al discloses an optical disk but does not disclose a disk drive. Ishii et al discloses a disk drive for optical disk. One of ordinary skill in the art would have been motivated to apply Takakuwa et al's disk into Ishii et al's drive. In this drive, the substrate has a thickness of less than 0.8 mm.

With regard to claim 60, Ishii et al further shows cylindrical receptacle 8 for holding the hub 1, the receptacle having a hole formed through the bottom thereof coaxially with the axis of rotation.

With regard to claim 61, Takakuwa et al shows that the disk plane tilting substantially with respect to a plane perpendicular to an axis of rotation of the substrate and also tilts at an angle away from the bottom of the cylindrical receptacle and the angle  $\theta$  has been corrected with some residual. One of ordinary skill would have been reasonably expect that the angle  $\theta$  satisfies the relationship of  $1 \text{ mrad} \leq \theta \leq 20 \text{ mrad}$ .

With regard to claim 62, Ishii et al shows that the hub is held movable in the cylindrical receptacle 8.

With regard to claims 63 and 72, Takakuwa et al shows that the substrate has a thickness between 0.1-0.7 mm.

With regard to claim 79, Ishii et al further shows cylindrical receptacle 8 for holding the hub 1, the receptacle having a hole formed through the bottom thereof coaxially with the axis of rotation.

With regard to claims 78 and 83, the above constructed device includes a record disk having an axis of rotation, a thickness of 0.6 mm, which is less than 0.8

Art Unit: 2652

mm; a disk plane tilting at a tilt with a plane perpendicular to the axis of rotation is correct with some residual, one of ordinary skill in the art would have reasonably expect that the tilt angle  $\theta$  satisfies the relationship of  $1 \text{ mrad} \leq \theta \leq 20 \text{ mrad}$ .

4. Claims 81, 82, 84, and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al in view of Takakuwa et al c as applied to claim 79, further in view of Suzuki (US 5,058,094).

With regard to claim 81, Ishii et al Takakuwa et al show a device, wherein the driving unit has a rotating shaft for rotating the record disk, does not show the structure of the rotating portion. Suzuki shows a device, wherein the rotating shaft has a cylindrical recess formed coaxially in the top thereof for holding the cylindrical receptacle, the rotating shaft also has a side wall defining the recess, and the support is formed at the top of the side wall.

With regard to claim 82, Suzuki further shows in Fig. 5B that the rotating shaft 4+5 protrudes axially from the bottom of the cylindrical recess, and the shaft includes: a first columnar protrusion having an outer diameter larger than that of the hole in the bottom of the record disk; and a second columnar protrusion protruding coaxially from the first protrusion axially of the rotating shaft.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to apply the structure taught by Suzuki. The rationale is as follows: Suzuki teaches that using such a structure, the occurrence of so-called misclamping can be prevented (Column 2, lines 10-15). One of ordinary skill in the art would have been motivated to do so to prevent misclamping.

Art Unit: 2652

With regard to claim 84, Suzuki further shows that the top of the cylindrical wall defining the recess of the rotating shaft extends radially outward.

With regard to claim 85, Suzuki further shows in Fig. 5B that when the record disk is mounted on the driving apparatus, the hole of the disk engages with the second protrusion to support the disk plane of the disk on top of the horizontal support, Yokouchi shows that the disk plane is kept at an angle of 10 or less mrad with a plane perpendicular to the axis of rotation of the disk as explained above.

5. Claims 80 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al in view of Teshima (US 5,867,346).

With regard to claim 80, Ishii et al shows the driving unit has a rotating shaft for rotating the record disk, but fail to show the support is formed at the top of the shaft.

Teshima shows a driving unit in Fig. 3, wherein the support 8 is formed at the top of shaft 17.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to form the support on the top of the shaft as taught by Teshima. The rationale is as follows: Teshima teaches that it can suppress the warping of the disk (Column 2, lines 8-10). One of ordinary skill in the art would have been motivated to do so to suppress wrapping of the disk.

With regard to claim 86, Ishii et al further shows that the rotating shaft further includes a magnet 9 fitted therein for attracting the hub.



Art Unit: 2652

6. Claim 87 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al in view of Teshima as applied to claim 86, further in view of Sandstrom et al (US 6,154,441).

With regard to claim 87, Ishii et al shows a magnet, but fails to show it is an electromagnet.

Sandstrom et al Shows that the magnet is electromagnet (Column 11, lines 64-66).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to include an electromagnet as an alternative. The rationale is as follows: Sandstrom et al shows the magnet can be an electromagnet, and electromagnet is also widely used in the art. One of ordinary skill in the art would have been motivated to include the electromagnet as an alternative.

#### ***Allowable Subject Matter***

7. Claims 51-57 and 88-94 are allowed.

Claims 64, 65, 73, and 74 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

- With regard to claim Claims 51, 64, 65, 73, 74, as the closest reference, Yokota (US 5,987,003) shows an optical disk, including a disk substrate having a hole formed through the center thereof; a recording layer, which is formed on the substrate and on which the information is recorded; a

Art Unit: 2652

recessed area, which has an area up to 30% of the total area of the disk substrate; **but fails to show** a hub provided on the center of the substrate so as to be movable relative to the substrate; the hub having a diameter which is 26% or more than that of the optical disk; the optical disk satisfies a relationship of  $Y/X \geq 0.015$ , where X is a projected area of the substrate and Y is a contact area between the hub and the substrate.

- With regard to claim 88, none of the prior art in the record discloses a driving apparatus for recording and reproducing information by radiating light onto the recording surface of a record disk including a light source for irradiating the record disk with light; a tilt sensor for measuring a tilt angle of the recording surface of the record disk relative to the optical axis of the light incident on the disk; a rotating shaft for rotating the record disk; an electromagnet embedded in the rotating shaft; and a controller for controlling the magnetic field intensity of the electromagnet based on the tilt angle detected by the tilt sensor, and for adjusting the force with which the hub presses the disk plane of the record disk.
- Applicant asserts that by using this arrangement, while the disk is rotated, its recording surface is kept horizontal (Spec. p. 66, lines 18-19).

### ***Response to Arguments***

8. Applicant's arguments, with respect to 51 have been fully considered and are persuasive. The rejection on claims 51-57 has been withdrawn.

Applicant's arguments with respect to claims 58, 67, and 76 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2652

**Conclusion**

9. The prior art made of record in PTO-892 Form and not relied upon is considered pertinent to applicant's disclosure.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

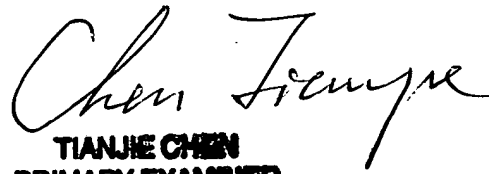
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is 571-272-7570. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2652

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**TIANJIE CHEN**  
**PRIMARY EXAMINER**